

**MULTIPLE ANTENNAS AT TRANSMITTERS AND RECEIVERS TO
ACHIEVING HIGHER DIVERSITY AND DATA RATES IN MIMO SYSTEMS**

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1 of 2 Drawing Sheets

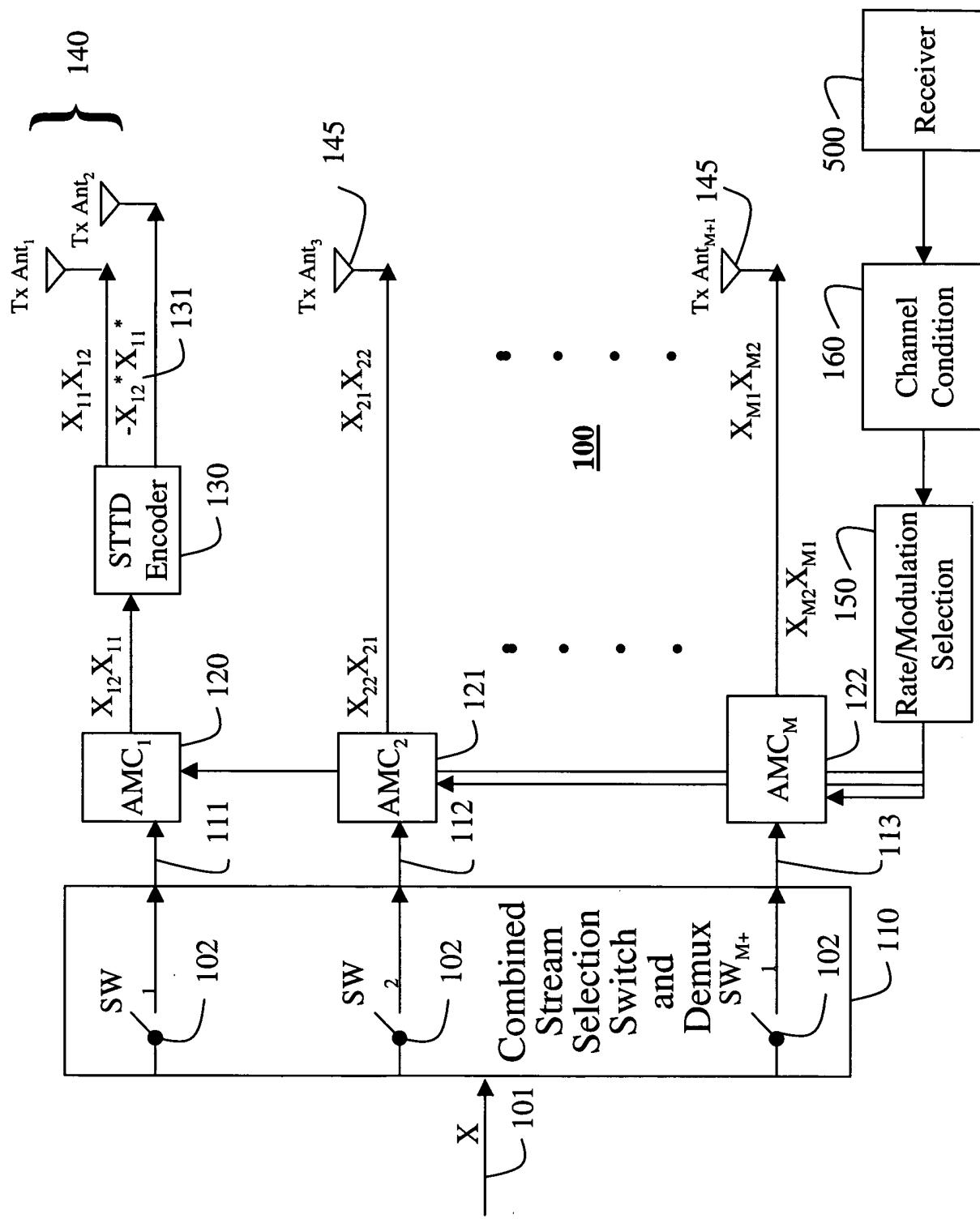


Fig. 1

MULTIPLE ANTENNAS AT TRANSMITTERS AND RECEIVERS TO ACHIEVING HIGHER DIVERSITY AND DATA RATES IN MIMO SYSTEMS

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Combined stream selection switch and demux

The diagram illustrates a combined stream selection switch and demux system. It starts with a **SW** (switch) block at the bottom left. The input signal X enters the **SW** from the bottom. The output of the **SW** is split into multiple paths, each labeled 102 . These paths feed into K AMC (Amplitude Modulation Control) blocks, labeled $AMC_1, AMC_K, \dots, AMC_{K+1}$. Each AMC_i receives an input $X_{i_1}X_{i_2}$ and outputs a signal $X_{i_2}X_{i_1}$ to an STTD Encoder. The STTD Encoder also receives a feedback signal $-X_{i_1}^*X_{i_2}^*$. The output of the STTD Encoder is sent to a Tx Antenna $Tx Ant_{i_1}$. The entire group of K blocks is labeled $\{ 140 \}$.

Below the AMC_{K+1} block, there is a **Rate/Modulation Selection** block. This block receives signals from the AMC_{K+1} block and the AMC_M block. It outputs a signal 145 to the AMC_{K+1} block and a signal 160 to the AMC_M block.

The AMC_M block receives an input $X_{M+1}X_{M2}$ and outputs a signal $X_{M2}X_{M1}$ to an STTD Encoder. The STTD Encoder also receives a feedback signal $-X_{M1}^*X_{M2}^*$. The output of the STTD Encoder is sent to a Tx Antenna $Tx Ant_{M+1}$. The entire group of M blocks is labeled $\{ 145 \}$.

On the right side, a **Channel Condition** block receives signals from the AMC_M block and the **Rate/Modulation Selection** block. It outputs a signal 500 to a **Receiver** block.